CLAIMS

1. A lithographic projection apparatus comprising:

a radiation system to supply a projection beam of electromagnetic radiation having a wavelength of 250nm or less;

a support structure adapted to support patterning structure which can be used to pattern the projection beam according to a desired pattern;

a substrate table to hold a substrate;

a projection system to project the patterned beam onto a target portion of the substrate; and

a gas supply to supply a purge gas to a space in said apparatus, said space containing an optical component positioned to interact with the projection beam, wherein said purge gas comprises molecular oxygen at a total partial pressure of from $1x10^{-4}$ Pa to 1 Pa.

2. An apparatus according to claim 1, wherein said purge gas further comprises an inert gas selected from the group comprising helium, argon, nitrogen and mixtures thereof, and wherein the total amount of molecular oxygen present in said purge gas is from 1 ppb to 10 ppm by volume.

3. An apparatus according to claim 1, wherein said space is substantially evacuated.

4. An apparatus according to claim 1, which apparatus further comprises a further supply of electromagnetic radiation having a wavelength of 250nm or less and arranged to supply such radiation onto said optical component.

5. A device manufacturing method comprising:

projecting a patterned beam of radiation having a wavelength of 250nm or less onto a target portion of a layer of radiation-sensitive material on a substrate, and

irradiating a space containing an optical component of a lithographic projection apparatus which is positioned to interact with the projection beam with the projection beam and supplying to said space a purge gas comprising molecular oxygen at a total partial pressure of from $1x10^{-4}$ Pa to 1 Pa..

6. A method according to claim 5, wherein the purge gas further comprises one of an inert gas, preferably helium, argon, nitrogen and mixtures thereof, and wherein the total amount of molecular oxygen present in said purge gas is from 1 ppb to 10 ppm by volume.

7. A method according to claim 5, wherein said space is substantially evacuated.

8. A method according to claim 5, further comprising:

supplying a further beam of electromagnetic radiation having a wavelength of 250nm or less, and

irradiating said optical component with said further beam of electromagnetic radiation, while projecting said patterned beam of radiation onto said target portion.